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ABSTRACT

Educational practice is influenced, in part, by the constant visualization of gender stereotypes throughout society in various forms, in both the old and new technologies. The imagery of computer technology as male turf has been carried into the World Wide Web through graphic advertisements. Male administrators make decisions about school practice that influence the implementation of new distance education technologies. The pervasive message of gender stereotypes has a tremendous influence on children and adults, and can bring biased value systems into what seems to be otherwise technologically innovative environments. The paper discusses developing male and female stereotypes; culture and groups; and gender stereotypes in print media, television, cyberspace, and ITV educational environments. Instructional designers can influence the educational industry, home market, school environment, and practices in business and military environments. Instructional designers can influence educational practice by designing instructional environments that attend to the needs of the female population as well as those of the males. Even though the majority of network users are males, females must be encouraged to learn skills and be provided with opportunities to have equal access to information. (Contains 41 references.) (SWC)

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New Technologies and Gender Equity: New Bottles with Old Wine

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Abstract

Part of what influences educational practice is the constant visualization of gender stereotypes throughout our society in various forms, ranging from the older technologies to the new technologies. Further, the imagery of computer technology itself as male turf has now been carried into the WWW through graphic advertisements. Male administrators continue to make decisions about school practice and this influences the implementation of the new distance education technologies. We must take stock of the pervasive messages of gender stereotypes, their tremendous influence on children and adults, and be aware of how these stereotypes can bring biased value systems into what seems to be otherwise technologically innovative environments.

Historically, society has carried messages to the public that are laden with gender stereotypes. These messages reach people through many forms of communication, including the spoken word, print-based and electronic text, still images, full-motion images, auditory channels, and various combinations of these forms. The stereotypes permeate our magazines and newspapers, books, television programming, entertainment resources, advertisements, educational materials, school practices, work environments, and interpersonal contacts. They affect our child-rearing practices, choices of products and activities, fashion design, attitudes, value systems, aspirations, self concepts, opportunities, access to information, social contacts, and wage-earning potential.

The stereotypes are so deeply ingrained into our society that even when people recognize the discriminations, they accept it as *the way things are*. Thus parents unwittingly go along with the toy and garment manufacturers, buying passive toys and pastel-colored clothing for their daughters, and action or problem-solving toys and brightly-colored clothing for their sons. Girls are groomed for passive and supportive roles while boys are groomed for careers and leadership. Girls learn to dream of marriage, and boys learn to dream of independence. Girls learn to babysit while boys learn to play the stock market.

Somehow these practices get passed along into the educational system and opportunities for school and work are influenced by gender. Part of what influences educational practice is the constant visualization of gender stereotypes throughout our society in various forms, ranging from the older technologies to the new technologies. Further, the imagery of computer technology itself as male turf has now been carried into the WWW through graphic advertisements. The WWW advertisements have the potential to reach an even larger audience and be more influential than the other forms of media which reach a more limited target audience. We must take stock of the pervasive messages of gender stereotypes and their tremendous influence on children and adults. First, let's look at some of the ways in which people receive these messages.

Developing Male and Female Stereotypes

Girls and boys seem to mix well until they reach preschool age, when there begins a distinct emphasis on activities and treatment of children by gender. By the time they are five years old, there is a distinct value system at work within them that clearly specifies values that they pick up from messages within our culture, its fairy tales, media imagery, and so on. The effect of the value system can be seen in the toys that the children ask for, their hobbies, and the gender separation that evolves into things like birthday parties that are segregated by gender at the tender age of six. While this is not true for all girls and all boys, it is a pattern that is evident in our schools, in our homes, and in our society. If you doubt for one moment that it is true, then watch patterns of socialization as students walk to and from school or ask yourself if you have ever heard of the comment, "he plays like a girl" or "he runs like a girl" in reference to any sports activity. This familiar comment certainly is not flattering to anyone and does not recognize the achievement of women athletes, but instead seems to reflect the everlasting attitude of sports being a male domain.

People believe what they are brought up with and what they see in the media. Thus cultural background influences beliefs and behavior, and so does the media. Take for example, the value systems passed on from a parent to a child, a teacher to a student, a religious leader to a congregation, or the media to a consumer. Now think about art and the way women have been portrayed through hundreds of years. Art forms have traditionally portrayed

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women as beautiful, sexy, and passive. Think about the great painters of this world and the way they have depicted women as opposed to men. The influence of the imagery most certainly has had an affect on both men and women.

Increasing attention to gender equity should yield more balance, especially in instructional materials, practices, advertising, and entertainment. Yet a close examination of gender as portrayed with the popular media, reveals a clear, consistent, and pervasive relationship that has deep historical roots, and that winds throughout our daily lives and perpetuates itself through its interweaving with society. Further, the role of girls and women in relation to the new media, has made little progress beyond that depicted with the now-traditional form.

These biases continue to support instructional design in its historical sense by constantly feeding the old system while all but strangling attempts to pay serious attention to gender equity (McCormick, 1994; Gornick & Moran, 1972). Materials developed for use in public, private, and military schools as well as instructional messages delivered to the public through advertising, television, and public service messages continue to portray women and men in stereotypical ways. Despite attempts to correct this situation over many years, a recent study of computer clip-art images reveals that the stereotypes have invaded the desktop computing environment, with images of men depicted in leadership and authority roles, while women are depicted in subordinate roles (Binns & Branch, 1995).

The complexities of this relationship are enormous, yet can be difficult to recognize, reveal, analyze, explain, and redirect. Like society itself the complexities reflect the dynamics of different situations in different ways, among different individuals. An examination of the complex relationship between instructional design and gender reveals inequities that result from a persistent pattern of practice. Recognizing the result of those inequities can be easier than finding the causes and correcting the problem at its root.

Inequities that result from the practice of instructional design often go unrecognized because they emerge not just as a result of what has been done, but also as a result of what has been left undone. The neglect and omission of the female population reveal themselves in subtle ways on an individual basis, but as a collective result appear throughout society as something that begins in the home, and perpetuates itself through schooling and employment practices. If that was not the case, then there would be no need for recent efforts to attract girls into the study of math and science (Kable & Meece, 1994) and the number of distressing stories about females succeeding despite the myriad of obstacles (Aisenberg & Harrington, 1988; Clark & Corcoran, 1986; Frenkel, 1990; Gornick, 1990) would no longer be told.

The group of papers in this section present information about the way that gender is influenced by society, role expectations, advertisements, and educational decision makers. Images in advertisements that began in a print-based format, but have evolved to full-motion television, and now to the WWW continue to portray men and women in stereotyped roles. Males continue to dominate the computer culture, cyberspace, clip art, and the advertising about using technology professionally and productively. Male administrators continue to hold top administrative jobs in the professions, including the educational field, and their decisions most definitely influence the use of technology in classrooms, whether or not the teachers who are in those classrooms are consulted. This paper and the papers that follow address the obvious gender stereotypes in our culture and group patterns, print materials, television programming and commercials, cyberspace, and educational environments.

Culture and Groups

Images of our society reflect the stereotypes and the realities of gender tracking, often separating males from females. For example, one might think about a common media image of adults at work. The typical chief executive officer (CEO) in real corporate board rooms and in the media is male; he wears a suit and looks like a competent leader. The real elementary school teacher is female, dresses for doing school projects, and wears a pleasant expression; in the media of course, she is young and good looking, or reflects the kindly grandmother image. The roles are defined, the images are engraved in people's minds.

The socially constructed meaning, expectations, and opportunities based on gender begin with differing expectations for people, depending upon their sex at birth (Stern & Karraker, 1989). They are revealed in the way we groom boys for leadership positions while we teach girls to be submissive, in the way we emphasize the importance of male-dominated sports, in the way teachers respond to boys differently than to girls (Olivares & Rosenthal, 1992), in the way stereotypes are perpetuated in the media (Kilbourne, 1990; Schwartz & Markham, 1985), and in the way we recruit for jobs (Bem & Bem, 1973; Fidell, 1975; Rowe, 1990). They are revealed in the way we provide examples, exercises, and meaningful educational opportunities that boys can often relate to better than girls. It reveals itself in the grooming of boys for entire categories of jobs involving science, math, medicine, and politics.

Girls can achieve equally well in the aforementioned areas but have not been encouraged to do so until recently. And now the attempts are filled with remaining hurdles and barriers that must be overcome (Top, 1991). Meaningful instructional design practice must do more to attend to these matters and take an active role in encouraging girls (Van Nostrand, 1991). While not enough has been done and it is too late for many, instructional designers can begin to make amends for those girls who have yet to come through our nation's school systems and workforce training programs. Instructional designers can make a better effort to provide experiences that girls can relate to, offering instructional opportunities that are not gender biased, and encouraging teachers to actively attend to issues of gender equity (Turkle & Papert 1990).

Let us examine some ideas about groups, territory, belonging, and oppression, and relate that information to the visual display of information about using computers. Community is the joining together or grouping of individuals in society. People tend to seek out others that have something in common with themselves and to whom they can relate to comfortably. People form communities from both natural and constructed situations. Natural communities are those that happen as a result of nature, such as being born a certain race, with a certain color hair, or as a male or female. Constructed communities are defined by boundaries that humans set by beliefs and interests. Religions beliefs and resulting congregations are once example. Another example is chosen activities, such as area of study, professional occupation, hobbies, leisure activities, participation in clubs, and so on.

Communities vary by the intensity of the membership in the community and how society views their importance. Communities play a large and significant role in society. They not only define where individuals fit into society, but also help people to establish identities. They provide continuity and a sense of belonging to something greater than an individual realm. Communities give people purpose.

People who are not members of a certain group can be left out, not necessarily due to being ostracized, but often due to sheer neglect, being viewed as the "others" or "them." This is where the concern comes in for females and the internet. For members of our society, the consequences of being out of the group, or an *other*, are usually not extreme on the surface but the subtle biases levied by those in powerful positions over many years are cumulative and can be devastating in terms of the domino effect that result. From that perspective, there is a paradigm established from which to examine potential remedial actions to get more females involved in computer technology endeavors.

Studies about females using technology often show that the percentage of females using technology is lower than the percentage of males using technology, yet they do not usually look at the social factor of natural group selection. Males are not necessarily trying consciously to keep females out of the computer domain, but they often exclude the females by forgetting to include them. Thus something like the casual conversations in which information is exchanged about computers can have a cumulative effect of leaving women in the dark about the computers.

Many women who work with technology believe that the environment is hostile toward them (Turkle & Papert, 1990). Yet, in order to correct this neglect an omission of women from the computer culture calls for a change the attitudes and behavior of society toward women and technology. Yet gender differences in attitudes toward technology begin in the way that males and females are raised, thus reflecting the social expectations of individuals, family, friends, and society (Canter, 1979; Davies & Kandel, 1981; Eccles, 1987), so this becomes a rather large issue.

Forcing males to change value systems will not necessarily help, but could actually do even more damage the relationship between males and females. Rather than insulting the technology-using male community it would be more productive to seek common ground on which males and females can begin to work together. One way of helping to establish this common ground is through imagery portrayed to the general public. Imagery that shows regular women in productive roles using technology in powerful ways would help.

The existing male technology community was shaped by our society. Members of that community are different in many ways from typical members of society in that they have found the common ground of special interest in computer technology. Like other special interest areas, they cannot be forced to accept others who do not seem to be a natural fit. If females have any chance of fitting into the computer technology community, then the males will need to be able to view the females as members of the community who have something in common with them, rather than as sexual objects, decorations, or servants to the male needs.

This concept of building common ground begs society to examine the way it defines community. The deep and persistent problem of gender separation begins in early childhood, permeates the toy and fashion industries, sticks in the minds of teachers who separate boys and girls in to separate groups, and pushes its way into homes as parents succumb to societal pressures separate activities along gender lines. If boys and girls are not allowed to

develop working relationships and friendships in early childhood, how can they be expected to overcome the barriers in later years? If they are bombarded with images of stereotypes about gender and technology throughout their lives, how will they be expected to overcome those stereotypes in later years?

It is important to ask men if they are trying to prevent women from joining their community. Is there a social bias toward females that begins in childhood, or is there just the simple comfort of migrating toward your own community with its common bonds? If that is the case, then the early gender message that boys and girls receive become especially important and influential.

While it might be true that boys and girls are in the same classes at school, it is also true that some teachers do a very efficient job of separating them within classroom groups. For example, "Preschool X" seems to have wonderful teachers but the entire group focuses on separating the children by gender. The class lists are hung in the hallway and distributed to parents not on the basis of who is in what class, but by gender, with all of the boys' names listed at the top and all of the girls' names listed at the bottom. When children break into groups it is by gender, and even on field trips, parents are assigned groups of children to supervise by gender (Knupfer, 1995-97).

It seems that society offers opportunities to mix, yet at some point during our childhood years those opportunities are changed by parents and teachers who define them as taboo situations, or blindly ignore the opportunities for shared experiences and the consequences of segregation. What role the media plays in this is certainly complex. By the teenage years, males and females are strongly discouraged from intermingling by parents who fear sexual encounters. Are we to believe that males and females cannot interact in platonic ways? If that is a common belief, then perhaps it is a result of the way the media continues to influence people through its portrayal of men and women in stereotypical ways (Roberts & Maccoby, 1985).

Print Media

A representative sampling of magazines collected by several people revealed consistent patterns in the advertising about the new technologies. Men were portrayed in prominent positions within the advertisements and accompanied by messages to "work stronger, work harder, gain power, manage people, and gain career advancement." The men projected professional images of people with great competence who were successful at work. The women on the other hand, were depicted in subordinate positions, serving others, and in roles that did not use the technology to accomplish their jobs or gain power or promotions. The women were usually wearing casual dress, often red in color, and seemed to be used as decorative graphics rather than in any meaningful way.

One magazine for educators, contained only two technology advertisements that included people. Toward the center was an ad with two women teachers, one a middle-aged, grandmotherly-looking, English teacher and the other a young, slender, blond, graphic designer. There were the stereotypes, the overweight and dull-looking grandmotherly English professor and the sexy, young blond graphic designer. Unfortunately, the advertisement also depicted both women standing at the bottom of a stairwell, clearly doing nothing for their career success by using their laptop computers that matched their body builds. Yes, the grandmother held the heavier, boxy laptop, and the young women held the more slender laptop, while the advertiser claimed that the computers were matched to the needs of the two women.

The inside back cover of that magazine carried the second image of a person, this time a male. In addition to being in a more prominent cover spot, the man depicted in the advertisement clearly was on top of the world as a result of using his laptop computer. He was freed of his ties to his office and was overlooking a beautiful body of water with lovely islands, working independently. Obviously, his laptop computer had liberated him from the physical confinements of his office space.

Both advertisements were produced by the same company, both were in black and white, both promoted laptop computers, and both followed the stereotypical representation of men and women regarding computer usage. Further, the advertisers even included the typical media portrayal of women as either grandmotherly or young and sexy. What ever happened to typical-looking women? Why are they absent from the advertisements?

Not one of the printed advertisements showed women achieving school or career gains due to using the technology. Why not? In contrast to the teenage girl wearing the red blouse and reading a book while sitting next to a computer, a similar advertisement depicted a teenage boy who was proclaimed to have discovered a prize-winning formula, obviously implying that he did so as the result of his use of computer technology. This contrast seems obvious. Why then would so many people not notice the imagery and continue to perpetuate it?

There were some interesting advertisements for business travelers that focused on the great features within new models of wheeled luggage that could be rolled down airplane aisles. Those with male characters tended to emphasize pockets for computer equipment, maintaining a common statement of being functional within a

technological business sense. The advertisements with female characters focused on being lightweight and spacious enough for all of a woman's weekend fashion needs.

One luggage advertisement clearly depicted three servants who were packing their employer's bags in preparation for a business trip. Although the reader could not see the employer, it was obvious that he was male from the collection of objects the servants had gathered. The most prominent feature of the advertisement was the computer equipment that fit so neatly within the luggage compartments. The advertiser wanted so much for the computer space to be noticed that the computer was given a much more important spot than the luggage itself. Perhaps most importantly, the advertisement clearly portrayed the message of the computer being a male machine, a very important male object within the collection of male clothes and supplies.

An eye-catching advertisement for a computer server, depicted a young, slender, and very sexily-posed woman sitting on the floor and leaning on a red, distorted computer standing in the vertical position. The woman was purely decoration. The advertisement dripped with sexual innuendo. A subliminal image of male genitalia was super-imposed onto the upright computer, reflected in the white lighting that matched the woman's white blouse that leaned against it. Such an advertisement certainly raises questions about what is being sold and under what disguise?

From this sampling of printed advertisements, it is clear that females are depicted in technology advertisements much less frequently than males. Further, when women are depicted, they are usually used as interesting decorations rather than as productive users of the technology.

Television

Television programming that reaches into most American homes. In television, women typically are depicted as feminine and showing their beauty, grace, style, sexual attractiveness, and subservience to men (Rutherford, 1994). Often they are depicted as beautiful yet not very intelligent, such as in *Three's Company* or *Married With Children*. The imagery of feminism is defined by the television producers and advertisers, not by real women in real life.

Consider the persuasiveness of televised advertising and the way it has influenced women to buy more and more cleaning products, believing themselves to be better homemakers if they clean better (Rutherford, 1994). But do these products actually liberate women from the household work by making it easier or do they tie women to the home by raising expectations for cleanliness and in so doing, keep women cleaning?

Advertisers like to show women shopping, cleaning, cooking, and looking after others. The act of cleaning takes on a meaning of love, order, and conformity. Thus the image of the homemaker providing a haven of harmonious safety, regardless of the state of the outside world and its many threats, is flashed repeatedly before the eyes of the viewing public (Rutherford, 1994).

On the other hand, men are associated with the outdoors, sports, cars and driving, relaxing, or entertaining at home (Rutherford, 1994). Roles within the work and home environments that command expertise or authority, such as recommendations for finances, insurance, making decisions for senior adults, or offering professional opinions, typically feature men. In addition, adult males are usually the announcers or authoritative voices for products, even for products mainly used by women.

The messages of gender separation begin early, laced throughout society in many ways. For example, the television commercials within popular children's programs feature the gratuitous sequence of two commercials for boys and two commercials for girls, not necessarily in any specific order, but certainly distinctive in gender imaging (Courtney & Whipple, 1983; Downs & Harrison, 1985; Kilbourne, 1990; Lovdal, 1989; Macklin & Kolbe, 1994). The boys' commercials are fast paced, outdoors and rugged, usually involve something on wheels, often depict aggression, employ music with a fast tempo and distinctive beat, and use camera angles that slant up, placing the boys in a dominant position within the picture. The girls' commercials are slower paced, indoors and sweet, usually involve dolls or fashion messages, often depict emotion and caring for others, employ musical sweet calm undertones, and use camera angles that slant down, placing the girls in the less dominant portion of the picture.

The stereotypes reinforced by television carry over into daily life (Berry & Asamen, 1993; Berry & Mitchell-Kerman, 1982; Bretl & Cantor, 1988; Fidell, 1975). Bring this imagery to the real experience of entering a computer consulting office at a typical university campus. The consultants are typically male, speak in a language of their own, and if you can understand the language then you might understand the help that is offered. Of course, the quality of help you get might depend completely on the degree of assistance that the consultant feels like providing, depending on an instant first impression of your needs and your perceived capacity to understand the help you get. With all too much frequency, the consultants miss completely and talk down to female clients or speak a

language of acronyms and other technobabble that the females do not understand. Why? Where does this miscommunication start and what perpetuates it?

As we consider the answer to this question, we must ask a host of related questions. For example, why do the commercials depict boys and girls separately, reinforcing the separation by sex at an early age that leads to separation by gender throughout life? At what point and for what reasons do the genders mix in the visual images depicted in advertising and in real life? What messages are given to males and females about turf, not mixing, and why? Is there common ground that can be found, and why is it not more frequently visited? As more emphasis is placed on using the visual media in schools, what implications does this separation have for males and females?

Cyberspace

As we reflect upon male and female domains, it is clear that computer technology has been dominated by males over what has now grown to decades. As computer skills become more important during this age of information and cyberspace activity, we need to think seriously about how gender stereotypes can influence not just the amount of time that people spend at computers, but the type of activities that males and females are exposed to when using computers. Further, we need to consider the types of messages that are carried to people about what is expected, appropriate, and acceptable.

Advertisers have invaded the electronic arena of the Internet and its popular graphic vehicle, the WWW. The Internet is clearly an environment that was structured by and for males. Now that the Internet is placing more emphasis on the WWW, will this richness of the visual communications environment be male turf like other technology areas or will the Web be utilized as easily by females? What societal factors will influence the outcome? So far, messages within our society that are reinforced by the mass media emphasis that youth and attractiveness are good, sex is important, and males and females have certain roles to play that are separate and distinct.

Recent research reveals that men and women communicate differently on the Internet, and that they have different communication ethics. One study revealed that nearly 70 percent of the messages posted by men used an adversarial style in which the writer distanced himself from, criticized, or ridiculed other participants, and often promoted his own importance. In contrast women displayed features of attenuation, often hedging apologizing, and asking questions rather than making assertions. The women's postings also tended to more personal both in terms of revealing thoughts and feelings, and being supportive of others (Herring, 1996).

Although some people claim that electronic communications are anonymous and therefore invite participation of both males and females, that will not necessarily be the case if our on-line communicative style reveals our gender. For then gender differences, along with their social consequences, are likely to persist in computer-mediated networks (Herring, 1996). As a part of the on-line network that is fast growing, popular, and graphically oriented, the Web holds a prominent position, so it will have great impact on its users. If females are to use the web productively, then it cannot be restricted to the male domain.

As we move into the new forum of Web communication, the public will once again have an opportunity to shape the messages about shared space and gender stereotypes. What will we see in the near future on the Web? At least one author has already portrayed the Web as male space, depicting the changing face of advertising, Web space that is, in a male hat, necktie, and business suit (Geraciotti, 1996). Even though the majority of network users are males (Shade, 1993), females must be encouraged to learn skills and be provided with opportunities to have equal access to information, and be portrayed in productive roles using technology. Women will have a chance to stake out a space, but will it be obvious or will it be overshadowed by the male presence that started the Internet and continues to dominate computer culture?

The answer to that question is certainly not simple, but people can influence educational applications of the Web by designing instructional environments that attend to the needs of the female population as well as those of males. Several authors have made suggestions about things that teacher and parents can do to improve gender equity in schools (Couch, 1995; McCormick, 1994; Olivares & Rosenthal, 1992; Ploghoft & Anderson, 1982). Those ideas can be transferred directly to any educational environment that does or does not use technology. To begin, parents and teachers can encourage reflective practice that makes adjustments to the needs at hand and considers ways to disassemble the walls of current gender segregation within our society. The information age brings the challenge of shifting responsibilities and one of the most important will be to find the common ground upon which males and females can find trust and build healthy working relationships that begin in childhood and carry on through adult life. It is no small challenge to overcome the images of mass media and years of stereotypes, but it can be done one step at a time.

ITV Educational Environments

The deeply ingrained cultural stereotypes and practices related to gender continue to support instruction in its historical sense by constantly feeding the old system while stifling attempts to pay serious attention to gender equity (McCormick, 1994; Gornick & Moran, 1972). Materials developed for use in public, private, and military schools as well as instructional messages delivered to the public through advertising, television, public service messages, and the WWW continue to portray males and females in stereotypical ways, with males in dominant positions. This has indeed been carried forth into the gender messages portrayed to the public about using the new technologies (Knupfer, 1996). Common practice dictates that males will serve in leadership and authority roles while females serve in subordinate positions. We see it in the images of males and females in the media, and we see it in practice. Thus decisions about instruction are often made by males and need to be implemented by females.

Integration of interactive television (ITV) into the regular course schedule is occurring in more instructional situations and in greater numbers of course offerings each year. If implemented appropriately, ITV can provide a rich and powerful learning environment that employs visual learning in a meaningful way. It can allow the sharing of visual resources across various groups of people, in different geographical locations.

The reasons for the increased use of ITV in recent years are numerous, ranging from the practical needs of serving students to the desire to integrate technology into the learning process. Politicians are pushing for increased funding for and utilization of ITV by convincing people that ITV increases the interaction between teachers and students. The real reasons for implementing ITV into classrooms span the range from real curriculum needs to false needs that are driven by the technology push.

The specific reasons for implementing ITV are varied and many for each situation, yet the common thread among all who implement ITV is that they claim to be seeking a better way to serve various educational needs. Many people believe that the most important advantage of ITV for small, geographically isolated schools is that ITV provides access to advanced or specialized courses that would not otherwise be available to them. Although ITV can provide enhanced curriculum opportunities and scheduling alternatives, the outcomes of using ITV are varied and complex. There is a dearth of information in the literature pertaining to the complexities of ITV's attendant outcomes.

While ITV is reputed to be successful and liberating in that it frees students from the restriction of place, and it is potentially disempowering as well. Students and instructors whose needs and preferences are ignored throughout the planning, implementation, and evaluation processes will not necessarily be able to successfully reach their educational goals by using the resulting ITV environment.

Educational institutions are purposeful enterprises driven by power structures that are informed by openly endorsed agendas of both political and personal origin (Freire, 1970; Knupfer, 1993; Shor & Freire, 1987). Analysis reveals that leadership and decision-making is clearly dominated by males who hold nearly all of the leadership roles, while the people who implement the ITV are females (Kansas State Board of Education, 1995). Preliminary analysis of the various constituencies that guide ITV network operations yields a similar result. At first this seems inconsequential, but further thought raises questions about the situation. For example, consider whether students and faculty are best served by decisions that are made by the dominant, male administrative culture without input by the female teachers and students who use the facility.

From time immemorial, males have been in decision-making roles within American homes, businesses, and educational institutions. Society has carried messages about gender stereotyping within instructional products and schooling practices, through the mass media, within social practice, and so on, thus perpetuating the situation complete with its advantages and disadvantages. Of course, there are good points to male leadership but there also are drawbacks. The disadvantages are likely to occur when decisions are made in isolation without regard to the female perspective.

As we witness a new time in education, when people are calling for school reform and the implementation of technology all in one breath, there is an opportunity to ask once again, whether or not there is adequate representation of the teachers, mostly female, in the business of ITV. It seems that the role of women in relation to the new media has made little progress, possibly even less than that within the more traditional forms of schooling. Could this be because technology has been viewed as male territory?

The complexities of this situation are enormous. Like society itself the complexities reflect the dynamics of different situations in different ways, among different individuals. An examination of the complex relationship between instructional planning and design, and gender reveals inequities that result from a persistent pattern of practice. Recognizing the result of those inequities can be easier than finding the causes and correcting the problem.

Inequities that result from the traditional practice of male decision making and female responsibility for implementation within the instructional system often go unrecognized because they emerge not just as a result of what has been done, but also as a result of what has been left undone. The neglect and omission of the female population reveal themselves in subtle ways on an individual basis, but as a collective result appear throughout society as something that begins in the home, and perpetuates itself through schooling and employment practices. If that were not the case, then there would be no need for recent efforts to attract girls into fields of study that are typically populated by males (Kable & Meece, 1994) and the number of distressing stories about females succeeding despite the myriad of obstacles (Aisenberg & Harrington, 1988; Clark & Corcoran, 1986; Frenkel, 1990; Gornick, 1990) would no longer be told.

Summary

The real concern of this paper goes beyond the biases of the media representations, to the larger dimension of the people they influence, from the instructional designers to classroom practice, from teachers to students, from parents to children, and so on. Instructional designers can influence the entertainment industry, home market, school environment, and practices in business and military environments. Designers can accept the importance of their role in shaping the self concept and encouraging equitable access to job skills that later translate into life skills and wages commensurate with experience. A more positive and forward-thinking outlook on the role of females in our society can certainly do much to influence the drive and effort that is currently necessary for females to overcome the many obstacles in daily life.

Instructional designers can influence educational practice by designing instructional environments that attend to the needs of the female population as well as those of males. They can encourage reflective practice that makes adjustments to the needs at hand. The information age brings the challenge of shifting responsibilities. Even though the majority of network users are males (Shade, 1993), females must be encouraged to learn skills and be provided with opportunities to have equal access to information.

Until society gets beyond viewing women as second class citizens in stereotypical roles, then instructional designers will have a difficult job in educating the public. Yet it can be done. The first step is to educate instructional designers to attend to the needs of a pluralistic society. The second step is to encourage business, industry, government, and education institutions to include knowledgeable designers on their project development teams. The designers can produce text-based and mediated materials that attend to the needs of females as well as males. Further, they can provide better training for teachers and others who provide information to the masses.

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